

Booth, S. & Hulten, M. (2003), Open dimensions of variation: An empirical study of learning in a Web-based discussion. *Instructional Science*, 31, 65-86.

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As increasing numbers of undergraduate students in higher education are engaging in online group discussions as part of their course work, there is a need to gain insights into the nature of the experience of learning in this new context. Previous studies have reported benefits for students who engaged in online discussions, but few describe these benefits within a theoretical framework (Harasim, 1990; Light & Colburn, 1997).

This paper proposes a phenomenographic perspective of learning as a way of framing and analyzing online discussions. A phenomenographic view of learning is best described as a change from a naïve and undifferentiated understanding of a phenomenon or idea to a more differentiated and sophisticated understanding (Marton and Booth 1997). A phenomenographic view requires students to discern critical aspects of a complex situation, set of ideas or evidence of a phenomenon, to differentiate amongst the various aspects and to focus on the most relevant to the situation. Given this view of learning, the activities in which students engage in an online discussion are analysed in relation to points in the discussions where students identify and focus on differentiating characteristics within a topic of interest. This is in contrast to characterizing group discussions as sets of general behaviours that can be quantified, such as participating, providing feedback, or summarizing. The authors suggest that these behaviours constitute studying, not learning. The distinction between studying and learning may appear subtle. However, to focus on learning requires that we focus on how particular content is understood within a particular context, not the generic activities that surround the content, nor the general patterns of interaction between participants.

This paper describes the results of a study of engineers enrolled in a distance course in which they "designed" an automatic vehicle. The course can be described as blended, as there were both online and face-to-face sessions. The study analysed asynchronous group discussions, which constituted the communication mode for an optional collaborative project. The goal of the collaborative project was to create a specification for an automatic driving system. In keeping with a phenomenographic methodology, the analysis focused on seeking themes that emerged from the online discussions for the group as a whole and creating categories that represented these themes.

Phenomenographic studies traditionally involve in-depth, semi-structured interviews with students as they attempt to solve a particular problem or perform a particular task. This approach is one way to gain the learners' perspective on the process of learning, on how they approach subject matter, on what preconceptions they bring to the learning situation,

and on how they perceive and make sense of what is presented to them by an instructor, or instructional materials.

The kinds of tasks or problems which researchers pose to the student are often very different from the kinds of things students are normally asked to do in traditional assessments for most courses. It is unlikely that the kinds of results reported in these studies would be discovered if one had carried out an analysis of content alone. It is because the studies aimed to understand students' experience that the results are so compelling and provide so rich a source of data that can inform our understanding of the nature of learning.

In the current study, a phenomenographic analysis was carried out using transcripts from asynchronous discussions, and not on interview data. The researcher was thus removed from direct contact with the participants, and had no influence over the direction in which the group discussion proceeded. This alteration of the object of study may overcome some criticisms that have been directed at phenomenographic research related to the objectivity of the researcher as participant. However, the analysis may have been limited due to the lack of interview data, a source that provides a more in-depth view of particular ways in which students experience a phenomenon.

The fundamental question that drove the analysis was, "Where is the learning?" The answer to this question led to looking for evidence that students were engaged in discerning variation in what is required in specifying an automatic vehicle. The analysis attempted to focus on pivotal instances in the discussions in which this occurred. For example, the authors provide the following excerpt as evidence that a student has discerned a discerning and critical aspect of designing an automatic system.

"I think we should specify our system to work in city traffic as well as highway traffic. The only difference, really, from city traffic and out-of-city traffic, is that there are more cars, more curves and more traffic lights in the city."
(Booth, S. & Hulten, M., 2003, p. 65)

This transcript is proposed as a contribution that will lead to learning because it provides an opportunity for the individual student and the larger group to focus on the variation that distinguishes city from out-of-city requirements.

The outcome for this study is a proposed taxonomy of contributions and the above is considered to be a *learning contribution*. Other contributions in the taxonomy include *participatory*, *factual*, and *reflective*. A *participatory contribution* is described as those that tended to lend structure to the discussion and to contribute to continuation of a thread, and referred directly or implicitly to another group members' contribution. A *factual contribution* brought an individual's factual knowledge to the discussion. A *reflective contribution* is described as those that indicate active participation in the project development and interactivity within the group. These contributions are not merely referring to another members' contribution, but include statements and evidence of agreeing or disagreeing, comparing ideas or isolating a particular idea in more detail.

The authors confess that the *learning contribution* is the most difficult to isolate, because these are intimately associated with the contributions that come before and after their appearance. This difficulty is common in phenomenographic analysis, where the goal is to create categories of description that represent differences in the way students express experiences, but are intertwined in the actual process of learning. One category may depend on the other in sequence and timing much more than it appears when one takes each category in isolation. Therefore, particular contributions need to be analysed in the context of the overall discussion, not as isolated postings.

The authors conclude that the taxonomy may provide some assistance to online tutors but also acknowledge that this small-scale study does not provide evidence that may be necessarily generalized to other contexts. However, based on my own experience teaching large enrollment undergraduate online courses, the categories the taxonomy proposes provide a new and relevant approach to assessing online contributions to course conferences that I am keen to implement.

References

Harasim, L., Ed. (1990). *Online Education: Perspectives on a new environment*. New York: Praeger Publishers.

Hiltz, S. R. (1986). "The `virtual classroom'. Using computer mediated communication for university teaching." *Journal of Communication* 36(2), 95-104.

Light, P. and Light, V. (1999). Analysing asynchronous learning interactions; Computer-mediated communication in a conventional undergraduate setting. In K. Littleton and P. Light (Eds.). *Learning with Computers: Analysing productive interaction* (pp. 162-178). London: Routledge.

Marton, F. & Booth, S. (1997). *Learning and Awareness*. Mahwah, N.J., Lawrence Erlbaum Associates.

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